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10/591,778	09/06/2006	Markus Frey	SE/21-23025/A/PCT	4481
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BASF Corporation			BALASUBRAMANIAN, VENKATARAMAN	
Patent Department				
500 White Plains Road			ART UNIT	PAPER NUMBER
P.O. Box 2005				
Tarrytown, NY 10591			1624	
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		10/18/2010	ELECTRONIC	

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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Office Action Summary	Application No. 10/591,778 Examiner /Venkataraman Balasubramanian/	Applicant(s) FREY ET AL. Art Unit 1624
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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If no period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) Responsive to communication(s) filed on 04 June 2010.
- 2a) This action is FINAL. 2b) This action is non-final.
- 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) Claim(s) 1 and 4-13 is/are pending in the application.
 - 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) Claim(s) _____ is/are allowed.
- 6) Claim(s) 1 and 4-13 is/are rejected.
- 7) Claim(s) _____ is/are objected to.
- 8) Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) The specification is objected to by the Examiner.
- 10) The drawing(s) filed on _____ is/are: a) accepted or b) objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 - a) All b) Some * c) None of:
 - 1) Certified copies of the priority documents have been received.
 - 2) Certified copies of the priority documents have been received in Application No. _____.
 - 3) Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) Notice of References Cited (PTO-892)
- 2) Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- 5) Notice of Informal Patent Application
- 6) Other: _____

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission, which included cancellation of claims 2, 3, 14-22 and amendment to claim 1, filed on 04/21/2010 has been entered. Claims 1 and 4-13 are now pending. In view of applicants' response, the following 103 rejections made in the previous office action are reapplied to currently pending claims. In addition, a new ground of rejection is applied to currently pending claims.

Claim Rejections - 35 USC § 112

The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claims 1 and 4-13 are rejected under 35 U.S.C. 112, first paragraph, because the specification, while being enabling for process of making amine ether of formula A wherein the substituents include alkyl, cycloalkyl, cycloakeny, does not reasonably provide enablement for process of making any sterically hindered amine ether generically embraced in claim 1 including of sterically hindered amine ethers of formula B-O wherein the variable substituents include alkinyl, epoxide, unsaturated carboxylic

acid, heteroalkyl, heterocycloalkyl, CO, amino, NHalkyl, N(alkyl)₂, amino, silyl etc which are susceptible to organic hydroperoxide and or hydrogenation process. The specification does not enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make the invention commensurate in scope with these claims. Following apply.

In evaluating the enablement question, following factors are considered. Note In re Wands, 8 USPQ2d 1400 and Ex parte Forman, 230 USPQ 546. The factors include:

1) The nature of the invention, 2) the state of the prior art, 3) the predictability or lack thereof in the art, 4) the amount of direction or guidance present, 5) the presence or absence of working examples, 6) the breadth of the claims, and 7) the quantity of experimentation needed.

1. The nature of the invention and the state of the prior art:

The invention is drawn to a process of making amine ether from amine oxide and C₆-C₁₈alk-1-ene using organic hydroperoxide and catalyst including various iodides. Specification is not adequately enabled as to how to make compounds of formula (I) wherein the said amine oxide is variously substituted with reactive functional groups which are either susceptible to organic hydroperoxide and hydroperoxide in combination with iodide. Instant variable groups (R₁-R₁₆ in claim 6) are permitted to be various reactive groups such as alkinyl, heteroalkyl, heterocycloalkyl, COR₇, SR₈, NHR₁₈, N(R₁₈)₂, amino, cyano etc. which are known to be susceptible to organic hydroperoxide as evident from the monograph of t-butyl hydroperoxide cited in the IDS. For examples, it is clear that double bond oxidation, S-oxidation, N-oxidation P-oxidation can occur

with hydroperoxide. In addition, iodide can be oxidized which can then react with ketones. See Jones et al., t-Butyl Hydroperoxide, Encyclopedia of Reagents for Organic Synthesis, 1-19, 2001. Specification offers no teachings or suggestion as to how to perform the amine ether process in presence of these reactive groups. Thus, presence of such reactive groups are chemically incompatible the process of amine ether embraced in the instant claims. Furthermore, subsequent hydrogenation with various catalysts can also occur with number of such groups. For example, any unsaturated group as embraced in the claims can undergo hydrogenation, ketones can undergo reduction, epoxide can be cleaved, silyl groups removed etc. Specification offers no teachings or suggestion as to how to perform the amine ether process in presence of these reactive groups. Thus, presence of such reactive groups are chemically incompatible the process of amine ether embraced in the instant claims.

2. The predictability or lack thereof in the art:

Hence the process as applied to the above-mentioned compounds claimed by the applicant is not an art-recognized process and hence there should be adequate enabling disclosure in the specification with working example(s).

3. The amount of direction or guidance present:

Examples illustrated in the experimental section or written description offer no guidance or teachings as to how perform the process of making amine ether when reactive substituents or chemically incompatible substituents are present in the starting material.

4. The presence or absence of working examples:

Although examples 1-15 show the amine ether process, they are limited to amine oxide with no reactive functionality. There are no representative examples showing the viability of the process for plurality of reactive substituents embraced in the instant claims.

5. The breadth of the claims: Specification has no support, as noted above, for all compounds generically embraced in the claim language would lead to desired compound of formula I with said reactive groups and there is also no valid chemical reasoning for one trained in the art to expect that all these functional groups would be inert toward the oxidant organic peroxide/metal catalyst and or organic peroxide-iodide combination and subsequent hydrogenation embraced in the process claim.

6. The quantity of experimentation needed: The quantity of experimentation needed would be an undue burden on skilled art in the chemical art since there is inadequate guidance given to the skilled artisan for the many reasons stated above. Even with the undue burden of experimentation, there is no guarantee that one would get the product of desired structure, namely compound of formula I embraced in the instant claims in view of the prior art teachings. Thus, factors such as "sufficient working examples", the "level of skill in the art and predictability, etc. have been demonstrated to be sufficiently lacking in the case for the instant claims.

Also, note MPEP 2164.08(b) which states that claims that read on "... significant numbers of inoperative embodiments would render claims nonenabled when the specification does not clearly identify the operative embodiments and undue experimentation is involved in determining those that are operative".

Clearly that is the case here. Thus, factors such as "sufficient working examples", the "level of skill in the art and predictability, etc. have been demonstrated to be sufficiently lacking in the case for the instant claims.

MPEP 2164.01(a) states, "A conclusion of lack of enablement means that, based on the evidence regarding each of the above factors, the specification, at the time the application was filed, would not have taught one skilled in the art how to make and/or use the full scope of the claimed invention without undue experimentation. In re Wright, 999 F.2d 1557, 1562, 27 USPQ2d 1510, 1513 (Fed. Cir. 1993)."

That conclusion is clearly justified here. Thus, undue experimentation will be required to make Applicants' invention.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

Claims 1 and 4-13 are rejected under 35 U.S.C. 103(a) as being obvious over Frey et al. WO 03/045919.

The applied reference has a common inventor with the instant application. Based upon the earlier effective U.S. filing date of the reference, it constitutes prior art only under 35 U.S.C. 102(e). This rejection under 35 U.S.C. 103(a) might be overcome by: (1) a showing under 37 CFR 1.132 that any invention disclosed but not claimed in the reference was derived from the inventor of this application and is thus not an invention "by another"; (2) a showing of a date of invention for the claimed subject matter of the application which corresponds to subject matter disclosed but not claimed in the reference, prior to the effective U.S. filing date of the reference under 37 CFR 1.131; or (3) an oath or declaration under 37 CFR 1.130 stating that the application and reference are currently owned by the same party and that the inventor named in the application is the prior inventor under 35 U.S.C. 104, together with a terminal disclaimer in accordance with 37 CFR 1.321(c). This rejection might also be overcome by showing that the reference is disqualified under 35 U.S.C. 103(c) as prior art in a rejection under 35 U.S.C. 103(a). See MPEP § 706.02(l)(1) and § 706.02(l)(2).

Frey teaches the process for synthesis of amine ethers from secondary amino oxides, which include process of making instant compounds. See page 1, paragraph 6, and page 2 paragraphs 1-5 including formula A. Note the choice of E includes C₃-C₁₈alkenyl as required by instant claims. Note also the reaction is done in presence of hydrocarbon in general and the choice of hydrocarbon includes alkene as required by the instant claims. See pages 2-16 for various preferred embodiments of compounds

and pages 18-21 for details of the process. See generic examples 1-28 shown in pages 21-35. Especially see Examples 1-26 shown in pages 35-50. Particularly see Examples 5, 12, 15, 19, 21, 24 and 26 wherein cyclohexene is used as alkene. Frey differs in not exemplifying aliphatic alkenes as required by the instant claims. However, Frey teaches equivalency of those compounds exemplified in Examples 1-26 with those generically claimed for compound of formula A. Hence, one trained in the art would be motivated to make compounds of formula A including various choices of alkene with the guidance provided in examples 1-26 and expect the process to yield the desired product for the use taught in Frey.

Hence, one having ordinary skill in the art at the time of the invention was made would have been motivated to employ the process taught by Frey to the analogous starting materials and reactants of the instant invention along with suitable viscosity reducing agents and expect to obtain the desired product because he would have expected the analogous starting materials and reactants react similarly in view of the combine teaching of the prior art. It has been held that application of an old process to an analogous material to obtain a result consistent with the teachings of the art would have been obvious to one having ordinary skill. Note *In re Kerkhoven* 205 USPQ 1069.

Also see *KSR International Co. v. Teleflex Inc.*, 127 S.Ct. 1727 (2007), wherein the court stated that [w]hen there is a design need or market pressure to solve a problem and there are a finite number of identified, predictable solutions, a person of ordinary skill has good reason to pursue the known options within his or her technical

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grasp. If this leads to the anticipated success, it is likely the product not of innovation but of ordinary skill and common sense.

Such is the case with instant claims. Frey teaches process for a genus of compounds which include instant compounds and exemplifies the process for large number of compounds including cycloalkene as stated above. Hence, based on the teaching that compounds taught, which provide guidance to choose various choices of E and all the variables substituents taught therein one trained in the art would be motivated to make compounds of formula A including those with E as alkene as permitted by the reference. Such compounds are within the skill set of one trained in the art.

This rejection is same as made in the previous office action 07/27/2009 and is reapplied. Applicants' argument presented earlier to overcome this rejection is not persuasive. Frey teaches a process for a genus of compounds which include instant compounds and exemplifies the process for large number of compounds including cycloalkene as stated above. Hence, based on the teaching that compounds taught, which provide guidance to choose various choices of E and all the variables substituents taught therein one trained in the art would be motivated to make compounds of formula A including those with E as alkene as permitted by the reference. Furthermore, applicants have relied unexpected superior results shown in comparative examples to overcome the rejection of these claims made in the previous office action. However, the comparison of reaction with octane shown example 5 and 7 is not a proper comparison for the genus as whole embraced in these claims. In addition, claims

1, 3-5 and 7-13 are generic claims and they include the process for reacting any sterically hindered aminoxide with C₆-C₁₈alk-1-ene. Even claim 6 except for choice 1, there is no showing all other choices of hindered amines. Although, specification has unexpected/superior results, the comparison of the reaction with octane is not proper for all choices of sterically hindered amines generically embraced in the instant claims and such a comparison does not teach or suggest the same for the process of reacting any sterically hindered aminoxide with said 1-alkene. Hence, this rejection is deemed as proper.

Note Ex parte Gelles 22 USPQ 2nd 1318, especially the following quote: " The evidence relied upon also should be reasonably commensurate in scope with the subject matter claimed and illustrate the claimed subject matter " as a class" relative to prior art subject matter."

Claims 1 and 4-13 are rejected under 35 U.S.C. 103(a) as being obvious over Hafner et al. WO 01/92228.

Hafner teaches the process for synthesis of amine ethers from secondary amino oxides, which include process of making instant compounds. See page 2, paragraph 1, and paragraph 2 including formula A. Note the choice of E includes C₃-C₁₈alkenyl as required by instant claims. Note also the reaction is done in presence of hydrocarbon in general and the choice of hydrocarbon includes alkene as required by the instant claims. See pages 2-16 for various preferred embodiments of compounds and pages 16-21 for details of the process. See generic examples 1-28 shown in pages 21-35.

Especially see Examples 1-26 shown in pages 56-66. Particularly see Examples 2 and 11 wherein cyclohexene is used as alkene.

Hafner differs in not exemplifying aliphatic alkenes as required by the instant claims. However, Hafner teaches equivalency of those compounds exemplified in Examples 1-27 with those generically claimed for compound of formula A. Hence, one trained in the art would be motivated to make compounds of formula A including various choices of alkene with the guidance provided in examples 1-27 and expect the process to yield the desired product for the use taught in Hafner.

Hence, one having ordinary skill in the art at the time of the invention was made would have been motivated to employ the process taught by Hafner to the analogous starting materials and reactants of the instant invention along with suitable viscosity reducing agents and expect to obtain the desired product because he would have expected the analogous starting materials and reactants react similarly in view of the combine teaching of the prior art. It has been held that application of an old process to an analogous material to obtain a result consistent with the teachings of the art would have been obvious to one having ordinary skill. Note *In re Kerkhoven* 205 USPQ 1069.

Also see *KSR International Co. v. Teleflex Inc.*, 127 S.Ct. 1727 (2007), wherein the court stated that

[w]hen there is a design need or market pressure to solve a problem and there are a finite number of identified, predictable solutions, a person of ordinary skill has good reason to pursue the known options within his or her technical grasp. If this leads

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to the anticipated success, it is likely the product not of innovation but of ordinary skill and common sense.

Such is the case with instant claims. Hafner teaches a process for a genus of compounds which include instant compounds and exemplifies the process for large number of compounds including cycloalkene as stated above. Hence, based on the teaching that compounds taught, which provide guidance to choose various choices of E and all the variables substituents taught therein one trained in the art would be motivated to make compounds of formula A including those with E as alkene as permitted by the reference. Such compounds are within the skill set of one trained in the art.

This rejection is same as made in the previous office action 07/27/2009 and is replied. Applicants' argument presented earlier to overcome this rejection is not persuasive. Hafner teaches a process for a genus of compounds which include instant compounds and exemplifies the process for large number of compounds including cycloalkene as stated above. Hence, based on the teaching that compounds taught, which provide guidance to choose various choices of E and all the variables substituents taught therein one trained in the art would be motivated to make compounds of formula A including those with E as alkene as permitted by the reference. Hence, this rejection is deemed as proper.

Furthermore, applicants have relied unexpected superior results shown in comparative examples to overcome the rejection of these claims made in the previous office action. However, the comparison of reaction with octane shown example 5 and 7

is not a proper comparison for the genus as whole embraced in these claims. In addition, claims 1, 3-5 and 7-13 are generic claims and they include the process for reacting any sterically hindered aminoxide with C₆-C₁₈alk-1-ene. Even for claim 6 except for choice 1, there is no showing for all other choices of hindered amines. Although, specification has unexpected/superior results, the comparison with octane is not proper for all choices of sterically hindered amines generically embraced in the instant claims and such a comparison does not teach or suggest the same for the process of reacting any sterically hindered aminoxide with said 1-alkene. Hence, this rejection is deemed as proper.

Note Ex parte Gelles 22 USPQ 2nd 1318, especially the following quote: " The evidence relied upon also should be reasonably commensurate in scope with the subject matter claimed and illustrate the claimed subject matter " as a class" relative to prior art subject matter."

Claims 1 and 4-13 are rejected under 35 U.S.C. 103(a) as being obvious over Babiarz et al. WO 00/21933 in view of Frey or Hafner cite above.

Babiarz teaches a process for the synthesis of 4-substituted-N-(alk-2-en-1-yl)oxy-and aracyloxy-2,2,6,6-tetraalkylpiperidines using hydrogen peroxide. See pages 3-5 for the overall process and the definition of R-H which include alkenes of 3 to 20 carbons as required by the instant claims. See entire document. Particularly see examples 1-17. Especially see example 16 where 1-octene is used as R-H.

Instant process requires use of organic hydroperoxide for the process while Babiarz teaches only hydrogen peroxide.

Frey and Hafner as noted above teaches use for organic hydroperoxide for such a process and again as noted above their teaching includes alkene as reactants.

Thus, one trained in the art would be motivated to combine the teaching of primary reference and the secondary reference and use the combine teaching including use of organic hydroperoxide for the said process. It has been held that application of an old process to an analogous material to obtain a result consistent with the teachings of the art would have been obvious to one having ordinary skill. Note *In re Kerkhoven* 205 USPQ 1069 and *KSR International Co. v. Teleflex Inc.*, 127 S.Ct. 1727 (2007).

This rejection is same as made in the previous office action 07/27/2009 and is replied. Applicants' argument presented earlier to overcome this rejection is not persuasive. Babiarz teaches the overall process using hydrogen peroxide and step ii clearly teaches instant process using hydrogen peroxide. The secondary references teach use of hydrogen peroxide for the process. Hence, one trained in the art would be motivated to combine the process taught in these references including use of organic peroxide for the reaction of hydrocarbon for with of sterically hindered aminoxide. Hence, this rejection is deemed as proper.

Furthermore, applicants have relied unexpected superior results shown in comparative examples to overcome the rejection of claims 3-13 made in the previous office action. However, the comparison of reaction with octane shown example 5 and 7 is not a proper comparison. Babiarz clearly teaches reaction of 2,2,6,6-tetramethyl-4-piperidino-N-oxyl with 1-octene using hydrogen peroxide instant of instant organic

peroxide. Hence, a proper comparison will be use of hydrogen peroxide in the reaction and showing of unexpected results.

In addition, claims 1, 3-5 and 7-13 are generic claims and they include process of reacting any sterically hindered aminoxide with C₆-C₁₈alk-1-ene. Although, specification has unexpected/superior results, the comparison with octane is not proper for all choices of sterically hindered amines generically embraced in the instant claims and such comparison does not teach or suggest the same for the process of reacting any sterically hindered aminoxide with said 1-alkene. Even for claim 6 except for choice 1, there is no showing for all other choices of hindered amines. Hence, this rejection is deemed as proper.

Note Ex parte Gelles 22 USPQ 2nd 1318, especially the following quote: " The evidence relied upon also should be reasonably commensurate in scope with the subject matter claimed and illustrate the claimed subject matter " as a class" relative to prior art subject matter."

Conclusion

Any inquiry concerning this communication from the examiner should be addressed to Venkataraman Balasubramanian (Bala) whose telephone number is (571) 272-0662. The examiner can normally be reached on Monday through Thursday from 8.00 AM to 6.00 PM. The Supervisory Patent Examiner (SPE) of the art unit 1624 is James O. Wilson, whose telephone number is 571-272-0661. The fax phone number for the organization where this application or proceeding is assigned (571) 273-8300. Any

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inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (571) 272-1600.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAG. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-2 17-9197 (toll-free).

/Venkataraman Balasubramanian/

Primary Examiner, Art Unit 1624